**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**Before the Board of Patent Appeals and Interferences**

In re Patent Application of

Johan RUNE et al.

Serial No. 10/583,958

Filed: June 21, 2006

Atty Dkt. 2380-1323
C# M#
Confirmation No. 1514

TC/A.U.: 2617

Examiner: Kiet M. DOAN

Date: June 17, 2010

Title: ARRANGEMENTS AND METHOD FOR HANDLING MACRO DIVERSITY IN UTRAN TRANSPORT NETWORK

**Mail Stop Appeal Brief - Patents**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

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Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner twice/finally rejecting applicant's claim(s). $540.00 (1401)/$0.00 (2401) $

☒ An appeal **BRIEF** is attached in the pending appeal of the above-identified application $540.00 (1402)/$0.00 (2402) $ 540.00

☐ Credit for fees paid in prior appeal without decision on merits -$ ( )

☐ A reply brief is attached. **(no fee)**

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☒ **CREDIT CARD PAYMENT VIA EFS PAYMENT SCREEN.**

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140.**

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

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|---|---|
| In re Patent Application of | Confirmation No. 1514 |
| Johan RUNE et al. | Atty. Ref.: 2380-1323 |
| Appl. No. 10/583,958 | TC/A.U. 2617 |
| Filed: June 21, 2006 | Examiner: Kiet M. DOAN |

For: ARRANGEMENTS AND METHOD FOR HANDLING MACRO DIVERSITY IN UTRAN TRANSPORT NETWORK

* * * * * * * * * * *

June 17, 2010

**Mail Stop Appeal Brief - Patents**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

## APPEAL BRIEF

Sir:

Appellant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner as indicated in the Office Action dated November 17, 2009 (*hereinafter "Office Action"*). The period for reply having been extended one (1) month.

**TABLE OF CONTENTS**

## I. REAL PARTY IN INTEREST

The real party in interest is Telefonaktiebolaget LM Ericsson., a corporation of the country of Sweden.

## II. RELATED APPEALS AND INTERFERENCES

The Appellant, the undersigned, and the assignee are not aware of any related appeals, interferences, or judicial proceedings (past or present), which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF CLAIMS

Claims 42-80 and 82 are pending. The final rejections of claims 42-57, 59-78, 80 and 82 are being appealed. Claims 58 and 79 are indicated to include allowable subject matter.

## IV. STATUS OF AMENDMENTS

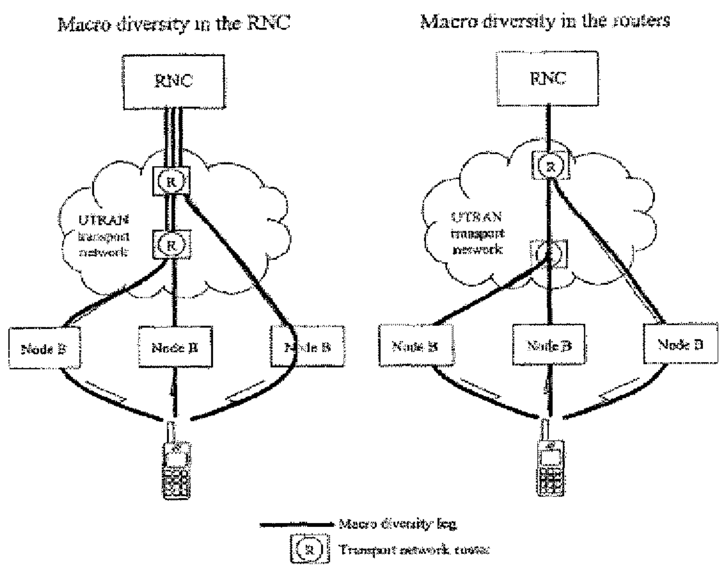
The current status of the claims is the same as those presented in the Amendment/Response submitted on July 24, 2009.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

An aspect of the present invention relates to an arrangement and a method for handling macro diversity in a UMTS Radio Access Network (UTRAN) transport network. A technique to combat link reliability problems over the

radio interface is the macro diversity technique that enables a user equipment (UE) or a mobile station to communicate with a fixed network by more than one radio link. *Specification, page 2, lines 20-22.*

Conventionally, the macro diversity functionality resides in the radio network controller (RNC). For the downlink, the RNC performs the splitting of data flow. For the uplink, the RNC performs the combining of the data flow. *Specification, page 3, lines 1-17.* This is illustrated in Fig. 4 of the present disclosure reproduced below.




On the left side of Fig. 4 which shows the conventional arrangement, the macro diversity is performed exclusively at the RNC. It is seen that in the conventional macro diversity solution, the split downlink flows and the uncombined uplink flows are transported all the way between the RNC and the Node Bs, which results in costly transmission resources being consumed in the transport network. This in turn results in significant costs for the operators. *Specification, page 4, lines 26-30.*

The right side of Fig. 4 illustrates a non-limiting example arrangement that solves/mitigates the disadvantages of the conventional macro diversity handling. In an embodiment, the macro diversity functionality is distributed from the RNC to the routers such that the splitting and combining of the traffic flows can by performed in any router or routers between the RNC and the Node Bs. *Specification, page 7, line 21 – page 8, line 2.* By distributing the macro diversity functionality to the routers, the RNC then need only send a single copy of each frame in the downlink connection instead of one for each macro diversity leg.

There are at least two advantages when the macro diversity functionalities are distributed to the routers. First, significant transmission savings can result, which translates into significant cost savings for the operator. Second, the RNCs can be located in more central locations of the network, which can limit transmission costs for the parallel macro diversity legs and allow co-locating them with MSCs or MGWs. Co-locating several nodes on the same site results in simplified operation and maintenance, which further reduces costs for the operator. *Specification, page 6, lines 8-24.*

The claims are directed to a router and to a method to perform distributed macro diversity functionalities. A listing of each independent claim and each dependent claim argued separately is provided below including exemplary reference(s) to page and line number(s) of the specification and reference numerals to the drawings as originally submitted.

**A. Independent Claims**

42. A router in an Internet Protocol, IP, based UMTS Terrestrial Radio Access Network (UTRAN) Transport Network within a Universal Mobile Telecommunication System, the UTRAN transport network carrying Dedicated Channel (DCH) frames on DCHs between a RNC and at least one Node B (*Figs. 4-6; page 7, line 21 et seq.*), the router comprising:

means for splitting one input downlink DCH traffic flow originating from the RNC into at least two output downlink DCH traffic flows by using an IP multicast protocol (*Figs. 5-6; page 8, line 4 – page 11, line 21*),

wherein each output downlink DCH flow carries user data destined to a same end user equipment (*Fig. 4; page 8, line 4 – page 10, line 7*),

wherein the router is separate from both the RNC and the Node Bs (*Figs. 4-6; page 7, line 21 et seq.*), and

wherein the router is in a communication traffic path between the RNC and the at least one Node B (*Figs. 5-6; page 10, line 9 – page 11, line 21*).

60. A method in an Internet Protocol, IP, based UMTS Terrestrial Radio Access Network (UTRAN) Transport Network within a Universal Mobile Telecommunication System, the UTRAN transport network carrying Dedicated Channel (DCH) frames on DCHs between a RNC and at least one Node B (*Figs. 4 – 6; page 7, line 21 et seq.*), the method comprising:

splitting, within a router, one input downlink DCH traffic flow originating from the RNC into at least two output downlink DCH traffic flows by using an IP multicast protocol (*Figs. 5-6; page 8, line 4 – page 11, line 21*),

wherein each output downlink DCH flow carries user data destined to a same end user equipment (*Fig. 4; page 8, line 4 – page 10, line 7*),

wherein the router is separate from both the RNC and the Node Bs (*Figs. 4-6; page 7, line 21 et seq.*), and

wherein the router is in a communication traffic path between the RNC and the at least one Node B (*Figs. 5-6; page 10, line 9 – page 11, line 21*).

## B. Dependent Claims

46. The router according to claim 42, wherein each output downlink DCH traffic flow is assigned a dedicated multicast destination address in the at least one Node B (*page 9, line 21 – page 10, line 2*).

52. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by means of utilization of a multicast address, assigned as a downlink destination address, as a source address of the DCH frames sent in the uplink DCH traffic flows from all participating Node Bs (*page 13, lines 6-18*).

53. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by retrieving a destination address and destination port(s) of uplink flows from the RNC (*page 13, line 20 – page 14, line 13*).

54. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by using an uplink flow identity implicit in a downlink DCH traffic flow (*page 16, lines 1-14*).

55. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by modifying MLD or IGMP protocol and a multicast routing protocol such that a destination port of an uplink is included in messages that are used to build a multicast tree (*page 16, lines 16-21*).

57. The router according to claim 56, wherein the means for combining further comprises:

means for building a new DCH frame from a received set of DCH frames in the at least two input uplink DCH traffic flows to be combined (*page 18, lines 4-15; page 19, lines 23-31*);

means for encapsulating the new DCH frame in a UDP packet (*page 18, lines 4-15; page 19, lines 23-31*); and

means for sending the UDP packet in an uplink direction (*page 18, lines 4-15; page 19, lines 23-31*).

59. The router according to claim 42, further comprising:

means for estimating a Latest Accepted Time of Arrival (LAToA) for a next set of DCH frames to be combined having a Connection Frame Number n (CFN n) based on times of arrival of previous set of frames having a CFN n-1 (*page 23, line 6 – page 25, line 18*); and

means for adjusting the estimates of the LAToA for each new frame adapted to a maximum transport delay that a frame can experience under normal circumstances on its path from the at least one Node B to the router (*page 24, line 10 – page 25, line 18*).

64. The method according to claim 60, wherein each output downlink DCH traffic flow is assigned a dedicated multicast destination address in the at least one Node B (*page 9, line 21 – page 10, line 2*).

70. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by means of a utilization of a multicast address, assigned as a downlink destination address, as a source address of the DCH frames sent in the uplink DCH traffic flows from all participating Node Bs (*page 13, lines 6-18*).

71. The method according to claim 70, further comprising:

identifying an originating Node B of an uplink DCH frame, based on a destination IP address and a destination UDP port assigned by the RNC to the Node B for the uplink of the DCH (*page 13, line 20 – page 14, line 13*).

72. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by retrieving the destination address and the destination port(s) of the uplink DCH traffic flows from the RNC (*page 13, line 20 – page 14, line 13*).

73. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by using an uplink flow identity implicit in the downlink flow (*page 16, lines 1-14*).

74. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by modifying MLD or IGMP protocol and a multicast routing protocol such that the destination port of the uplink is included in messages that are used to build a multicast tree (*page 16, lines 16-21*).

75. The method according to claim 70, further comprising:

identifying an originating Node B of an uplink DCH frame, based on a source UDP port assigned by the RNC to the Node B for the uplink of the DCH (*page 14, lines 8-13*).

78. The method according to claim 77, further comprising:

building a new DCH frame from a received set of DCH frames in the at least two input uplink DCH traffic flows to be combined (*page 18, lines 4-15; page 19, lines 23-31*);

encapsulating the new DCH frame in a UDP packet (*page 18, lines 4-15; page 19, lines 23-31*); and

sending the UDP packet in an uplink direction (*page 18, lines 4-15; page 19, lines 23-31*).

80. The method according to claim 60, further comprising:

estimating a Latest Accepted Time of Arrival (LAToA) for a next set of DCH frames to be combined having a Connection Frame Number n (CFN n) based on the times of arrival of the previous set of frames having a CFNn-1 (*page 23, line 6 – page 25, line 18*), and

adjusting the estimates of the LAToA for each new frame adapted to the maximum transport delay that a frame can experience under normal circumstances on its path from the Node B to the combining router (*page 24, line 10 – page 25, line 18*).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants respectfully request that the following grounds of rejection be reviewed:

- Whether the rejection of claims 42, 43, 46, 52-54, 56-61, 64, 70-73, 75-80 and 82 under 35 U.S.C. § 103(a) over Chen (U.S. Publication No. 2003/0161284 A1, *hereinafter "Chen"*) in view of Kiiski et al. (U.S. Publication No. 2002/0126664 A1, *hereinafter "Kiiski"*), and further in view of Cheng et al. (U.S. Publication No. 2005/0043045 A1, *hereinafter "Cheng"*) is improper; and
- Whether the rejection of claims 44, 45, 47-51, 55,62, 63, 65-69 and 74 are obvious under 35 U.S.C. § 103(a) over Chen in view of Kiiski, in view of Cheng, and further in view of Haggerty (U.S. Patent No. 6,331,983, *hereinafter "Haggerty"*) is improper.

## VII. ARGUMENT

The rejections should be reversed for at least the following reasons.

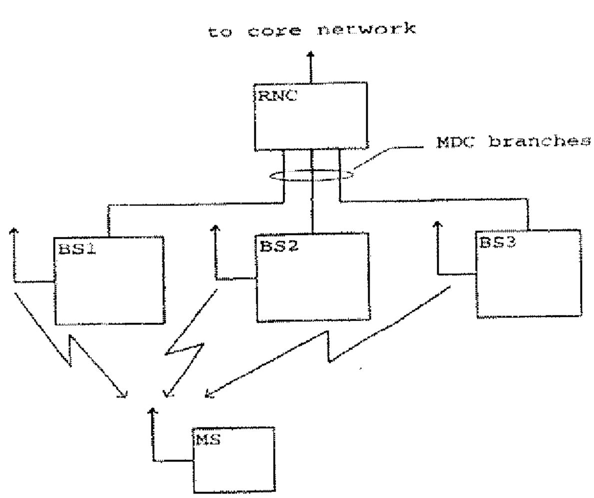
### A. The Rejection of Claims 42 and 60 Over Chen, Kiiski And Cheng Is Improper

In order for a claim to be rendered obvious under § 103(a), *inter alia,* each and every feature of that claim must be taught or suggested in a reference or combination of references. The combination of Chen, Kiiski and Cheng fails to teach or suggest each and every feature of claim 42.

For example, the combined features of "wherein the router is separate from both the RNC and the Node Bs and wherein the router is in a communication traffic path between the RNC and the at least one Node B" are not taught or suggested in any combination of Chen, Kiiski and Cheng.

The Examiner correctly admits that Chen and Kiiski do not teach or suggest these features. *Office Action, pages 3-4.* This is s logical consequence of neither Chen nor Kiiski discussing routers at all. Both Chen and Kiiski only mention RNCs and Node Bs in the context of providing macro diversity combining (MDC) functions. Since routers are not discussed at all, it naturally follows that Chen and Kiiski, individually or in combination, cannot disclose routers apart from the RNC and the Node B.

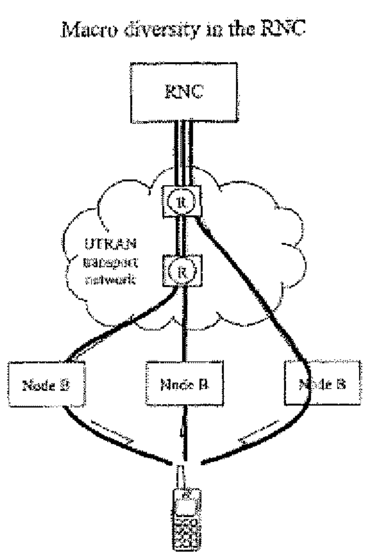
Despite this showing, the Examiner insists that Kiiski discloses the feature of the router "in a communication traffic path between the RNC and the at least one Node B." In particular, the Examiner relies upon Kiiski's Fig. 1 (reproduced below) as the sole basis to assert that the MDC is located between the RNC and the Node B. *Office Action, Response to Arguments, page 2.*

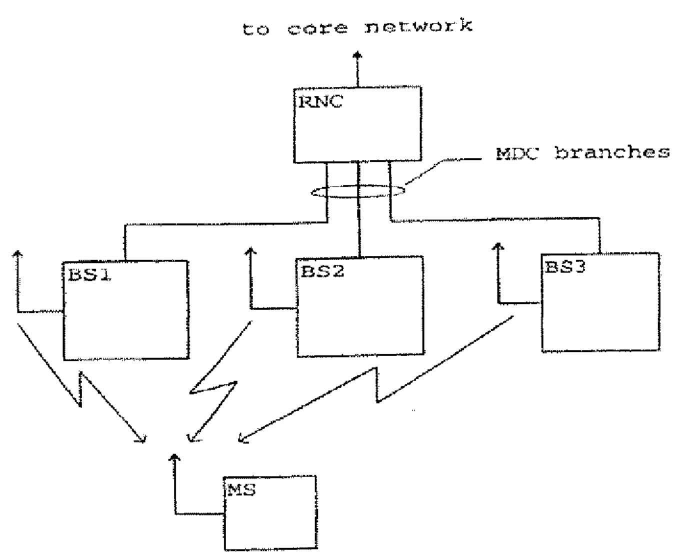


Kiiski discloses that Fig. 1 shows a radio access network, wherein a mobile station MS is simultaneously connected to three base stations BS1, BS2 and BS3 which are connected to an RNC and the MS transmits identical data streams to the base stations to achieve a macro diversity function. In such a macro diversity function, the best MDC branch or a combination of MDC branches is used for the actual communication. *Kiiski [0042].*

The Examiner appears to have mistakenly interpreted the circled portion immediately below the RNC labeled "MDC branches" as somehow disclosing that the actual macro diversity functionality is performed between the RNC and the base stations.

On the contrary, the multiple MDC branches exiting from the RNC to the base stations BS1, BS2 and BS3 is precisely the result of the RNC performing the macro diversity functionality. To make this point clear, the left side of Fig. 4 of the present application (showing macro diversity in RNC) and Fig. 1 of Kiiski are reproduced side by side below.

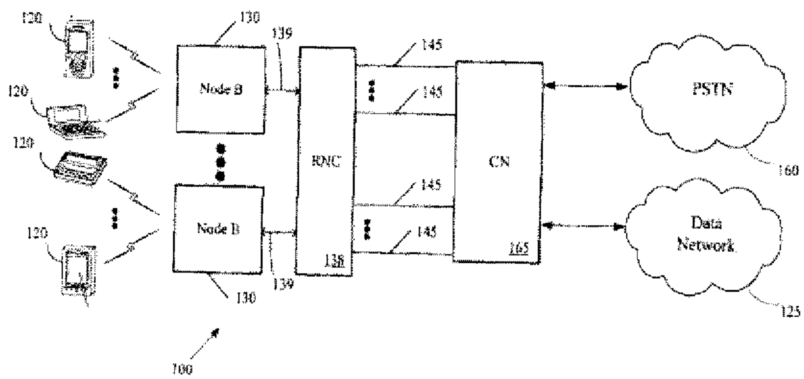


In both, multiple diversity legs emanate from the RNC. In short, Kiiski does not even remotely suggest placing the macro diversity functionality in nodes other than the RNC. Chen, like Kiiski, fails in this regard. To the extent that only the RNC is contemplated to perform the macro diversity functionality in Chen and Kiiski, both Chen and Kiiski teach away from the claimed invention. *KSR v. Teleflex, 550 U.S. 398, 127 S.CT. 1727 (2007) ("When the prior art teaches away from combining certain known elements, discovery of successful means of combining them is more likely to be non-obvious.").*

The Examiner mistakenly alleges that Cheng corrects for the above-noted deficiency of Chen and Kiiski. On the contrary, Cheng has no relevance in as far as macro diversity is concerned. Cheng is directed toward controlling uplink flow of information between a UE and a Node B. Cheng discloses that the UE transmits over a control channel to the Node B a signal requesting to transmit information to the Node B. The Node B uses information regarding a delay, such as a propagation and/or processing delay, associated with the UE to schedule the transmission of data. The UE then receives over a shared channel from the Node B a signal identifying a time at which the UE is permitted to transmit information. Thereafter, the UE transmits at the identified time over a data channel to the Node B a signal containing the information. *Cheng, Abstract.* In other words, Cheng is directed to scheduling uplink communication between a particular UE and a particular Node B. Macro diversity is simply not contemplated in Cheng.

In the Office Action, the Examiner relies upon paragraphs [0021] and [0022], which generally outlines a communication system 100 illustrated in FIG. 1 (reproduced below) in which Cheng's invention may be implemented.




The communication system 100 allows one or more UEs 120 to communicate with a data network 125 through one or more Node Bs 130. *Cheng [0017]*. A plurality of the Node Bs 130 can be coupled to the RNC 138 by connections 139. *Cheng [0018]*. The RNC 138 is, in turn, coupled to the Core Network (CN) 165 via a connection 145, and the CN 165 operates as an interface to a data network 125 and/or to a public telephone system (PSTN) 160. *Cheng [0019]*.

Cheng in paragraphs [0021] and [0022] merely indicates that in addition to the components of the communication system 100 illustrated in FIG. 1 (e.g., UEs 120, Node Bs 130, RNC 130, CN 165, PSTN 160, Data Network 125), the system 100 can also employ routers (not shown) between the Node Bs and the RNC or the CN. Cheng provides no other description regarding the routers. This is logical since the focus of Cheng is in scheduling of uplink communications between a particular pair of UE and Node B, and the routers

themselves play no relevant role in this matter. Cheng is not analogous to the claimed subject matter, and thus, it is improper to rely upon Cheng. *MPEP 2141.01(a).*

Note that even if somehow Cheng is wrongly determined to be analogous, the combination of Chen, Kiiski and Cheng still fails. As demonstrated, Chen and Kiiski at best only suggest performing the macro diversity functionality at the RNC. Routers are not mentioned, even in passing, in Chen and Kiiski. Cheng only mentions that routers can be placed between the Node B and the RNC in passing, which only suggests that the routers perform only the known functions – to route individual packets – known in the art.

Without the benefit of hindsight provided by the Appellant's disclosure, one of ordinary skill would not combine Chen, Kiiski and Cheng to arrive at the subject matter claimed in which routers, other than the RNC and the Node B, perform macro diversity function of splitting the DCH traffic flow as recited independent claim 42. It is well-established that hindsight reasoning is impermissible. *MPEP 2145.*

For at least the reasons stated above, independent claim 42 is distinguishable over the combination of Chen, Kiiski and Cheng. For reasons similar to those applied to claim 42, independent claim 60 is distinguishable over the combination of Chen, Kiiski and Cheng. Therefore, the rejection of claims 42 and 60 based on Chen, Kiiski and Cheng is improper.

The Examiner correctly does not rely upon Haggerty to correct for above-noted deficiencies of Chen, Kiiski and Cheng. Thus, independent claims 42

and 60, as well as claims 43-57, 59, 61-78, 80 and 82 dependent thereon are distinguishable over any combination of Chen, Kiiski, Cheng and Haggerty.

But as demonstrated below, the dependent claims are distinguishable on their own merits.

## B. The Rejection of Dependent Claims 46 And 64 Over Chen, Kiiski And Cheng Is Improper

Claims 46 and 64 recite that each output downlink DCH traffic flow is assigned a dedicated multicast destination address in the at least one Node B. The Examiner points to paragraph [0067] of Chen to allege that the feature is disclosed. On the contrary, paragraph [0067] merely describes that the transport blocks in a radio frame are encapsulated by the dedicated channel framing protocol (DCHFP) at the Node B and forwarded to the RNC. There is no mention of assigning any dedicated multicast destination address for a DCH flow.

Consequently, in addition to being dependent from independent claims 42 and 60 respectively, claims 46 and 64 are distinguishable over Chen, Kiiski and Cheng on their own merits. For at least these reasons, the rejection of claims 46 and 64 based on Chen, Kiiski and Cheng is improper.

## C. The Rejection of Dependent Claims 52 And 70 Over Chen, Kiiski And Cheng Is Improper.

Claims 52 and 70 recite identifying DCH frames belonging to different uplink DCH traffic flows by means of utilization of a multicast address,

assigned as a downlink destination address, as a source address of the DCH frames sent in the uplink DCH traffic flows from all participating Node Bs. Contrary to the Examiner's assertion, paragraphs [0060 – 0063] of Chen do not disclose this feature. Paragraphs [0061 – 0063] merely describes that the RNC supports frame distribution of a single frame on up to six different radio legs. Since frame distribution is only applicable in the downlink direction, paragraphs [0061 – 0063] are not applicable to claims 52 and 70.

Paragraph [0060] merely indicates that the RNC performs selection from a maximum of six frames received from different radio legs. There is no indication of how the uplink flows are identified, let alone any indication of utilizing a multicast address.

Consequently, in addition to being dependent from independent claims 42 and 60 respectively, claims 52 and 70 are distinguishable over Chen, Kiiski and Cheng on their own merits, and thus, the rejection of these claims is improper.

## D. The Rejection of Dependent Claims 53 And 72 Over Chen, Kiiski And Cheng Is Improper

Claims 53 and 72 recite identifying DCH frames belonging to different uplink DCH traffic flows by retrieving the destination address and the destination port(s) of the uplink DCH traffic flows from the RNC. Contrary to the Examiner's assertion, paragraphs [0054] and [0060 – 0063] of Chen do not

disclose this feature. The deficiencies of paragraphs [0060 – 0063] are demonstrated above.

Paragraph [0054] merely describes that in soft handovers in CDMA systems, the Serving RNC (SRNC) receives a frame from each Node B and performs a frame selection on the received frames on the uplink. On the downlink, the SRNC performs a frame distribution. Again, there is no indication of how the uplink flows are identified, let alone any indication of utilizing a multicast address and destination ports.

Consequently, in addition to being dependent from independent claims 42 and 60 respectively, claims 53 and 72 are distinguishable over Chen, Kiiski and Cheng on their own merits, and thus, the rejection of these claims is improper.

## E. The Rejection of Dependent Claims 54 And 73 Over Chen, Kiiski And Cheng Is Improper

Claims 54 and 73 recite identifying DCH frames belonging to different uplink DCH traffic flows by using an uplink flow identity implicit in the downlink flow. Examiner again refers to paragraphs [0060 – 0063] of Chen. The deficiency of paragraphs [0060 – 0063] is demonstrated above.

Consequently, in addition to being dependent from independent claims 42 and 60 respectively, claims 54 and 73 are distinguishable over Chen, Kiiski and Cheng on their own merits, and thus, the rejection of these claims is improper.

## F. The Rejection of Dependent Claims 57 And 78 Over Chen, Kiiski And Cheng Is Improper

Claims 57 and 78 recite building a new DCH frame from a received set of DCH frames in the at least two input uplink DCH traffic flows to be combined, encapsulating the new DCH frame in a UDP packet, and sending the UDP packet in an uplink direction.

Contrary to the Examiner's allegation, paragraphs [0054] and [0060 – 0063] of Chen only describe the frame selection process on the uplink and the frame distribution process on the downlink performed by the RNC. In the frame selection process, the higher quality frames are selected and passed on. The RNC does not build a new DCH frame as recited.

Consequently, in addition to being dependent from independent claims 42 and 60 respectively, claims 57 and 78 are distinguishable over Chen, Kiiski and Cheng on their own merits, and thus, the rejection of these claims is improper.

## G. The Rejection of Dependent Claims 59 And 80 Over Chen, Kiiski And Cheng Is Improper

Claims 59 and 80 recite estimating a Latest Accepted Time of Arrival (LAToA) for a next set of DCH frames to be combined having a Connection Frame Number n (CFN n) based on the times of arrival of the previous set of frames having a CFNn-1, and adjusting the estimates of the LAToA for each new frame adapted to the maximum transport delay that a frame can experience under normal circumstances on its path from the Node B to the

combining router. In other words, adjustment to LAToA of current DCH frame (associated with CFN n) is made, at least in some way, based on arrival times of previous frames (associated with CFN n-1).

On the contrary, paragraphs [0063] and [0074 – 0080] of Chen describe no such relationship between frames associated with different frame numbers. Consequently, in addition to being dependent from independent claims 42 and 60 respectively, claims 59 and 80 are distinguishable over Chen, Kiiski and Cheng on their own merits, and thus, the rejection of these claims is improper.

## H. The Rejection of Dependent Claims 71 And 75 Over Chen, Kiiski And Cheng Is Improper

Claim 71 recites identifying an originating Node B of an uplink DCH frame, based on a destination IP address and a destination UDP port assigned by the RNC to the Node B for the uplink of the DCH. Claim 75 recites identifying an originating Node B of an uplink DCH frame, based on a source UDP port assigned by the RNC to the Node B for the uplink of the DCH.

On the contrary, paragraphs [0048] and [0049] of Chen fails to disclose the above-recited features. Paragraph [0048] describes that there are differences between a soft and softer handover. Paragraph [0049] only describes that in the uplink direction for the soft handover, the code channel of the mobile station is received from both Node Bs, and the received data are routed to the RNC for combining. Nothing in these paragraphs indicate that the RNC assigns a destination IP address and/or ports to the Node Bs.

Consequently, in addition to being dependent from independent claim 60, claims 71 and 75 are distinguishable over Chen, Kiiski and Cheng on their own merits, and thus, the rejection of these claims is improper.

## I. The Rejection of Dependent Claims 55 And 74 Over Chen, Kiiski, Cheng And Haggerty Is Improper

Claims 55 and 74 recite identifying DCH frames belonging to different uplink DCH traffic flows by modifying MLD or IGMP protocol and a multicast routing protocol such that the destination port of the uplink is included in messages that are used to build a multicast tree.

On the contrary, column 5, lines 10-34 of Haggerty fails to disclose this feature. This is a portion of Haggerty that describes how multicast routers use the IGMP to learn the existing host group members on their directly attached subnets by sending IGMP queries and having IP hosts report their host group membership. The IGMP messages are encapsulated in IP datagrams. Haggerty discloses that the IGMP has only two kinds of packets: Host Membership Queries and Host Membership Reports. At best, the relied upon portion merely describes a querying and updating process in which a membership to a multicast group is determined. Haggerty is silent regarding identifying DCH frames by including any type of destination port in any uplink messages.

Consequently, in addition to being dependent from independent claims 42 and 60 respectively, claims 55 and 74 are distinguishable over Chen, Kiiski,

Cheng and Haggerty on their own merits, and thus, the rejection of these claims is improper.

## CONCLUSION

There are multiple independent reasons why the obviousness rejections each fail to set forth a prima facie case of obviousness for the appealed claims. The final rejection should be reversed, and the application passed to allowance.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants respectfully petition for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee is attached hereto.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

Respectfully submitted,

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## VIII. CLAIMS APPENDIX

Claims 1-41 (Canceled)

42. A router in an Internet Protocol, IP, based UMTS Terrestrial Radio Access Network (UTRAN) Transport Network within a Universal Mobile Telecommunication System, the UTRAN transport network carrying Dedicated Channel (DCH) frames on DCHs between a RNC and at least one Node B, the router comprising:

means for splitting one input downlink DCH traffic flow originating from the RNC into at least two output downlink DCH traffic flows by using an IP multicast protocol,

wherein each output downlink DCH flow carries user data destined to a same end user equipment,

wherein the router is separate from both the RNC and the Node Bs, and

wherein the router is in a communication traffic path between the RNC and the at least one Node B.

43. The router according to claim 42, wherein the router comprises means for replicating each DCH frame of the input downlink DCH traffic flow into a corresponding DCH frame of each output downlink DCH traffic flow and means for transmitting the replicated DCH frames of all output downlink DCH traffic flows according to the IP multicast protocol.

44. The router according to claim 42, wherein the IP multicast protocol is a Core Based Trees Multicast Routing version 2 (CBTv2) protocol.

45. The router according to claim 42, wherein the IP multicast protocol is a Protocol Independent Multicast-Sparse Mode (PIM-SM) protocol.

46. The router according to claim 42, wherein each output downlink DCH traffic flow is assigned a dedicated multicast destination address in the at least one Node B.

47. The router according to claim 46, wherein the means for splitting further comprises means for identifying a mapping between the RNC and the multicast destination address by using a CBTv2 or PIM-SM bootstrap mechanism.

48. The router according to claim 42, further comprising:

means for determining whether the router is a splitting and/or combination router by using protocol(s) CBTv2 and/or MLD,

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

49. The router according to claim 42, further comprising:

means for determining whether the router is a splitting and/or combination router by using protocol(s) PIM-SM and/or MLD,

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

50. The router according to claim 42, further comprising:

means for determining whether the router is a splitting and/or combination router by using protocol(s) PIM-SM and/or Internet Group Management Protocol (IGMP),

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

51. The router according to claim 42, further comprising:

means for determining whether the router is a splitting and/or combination router by using protocol(s) CBTv2 and/or Internet Group Management Protocol (IGMP),

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

52. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by means of utilization of a multicast address, assigned as a

downlink destination address, as a source address of the DCH frames sent in the uplink DCH traffic flows from all participating Node Bs.

53. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by retrieving a destination address and destination port(s) of uplink flows from the RNC.

54. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by using an uplink flow identity implicit in a downlink DCH traffic flow.

55. The router according to claim 42, further comprising:

means for identifying DCH frames belonging to different uplink DCH traffic flows by modifying MLD or IGMP protocol and a multicast routing protocol such that a destination port of an uplink is included in messages that are used to build a multicast tree.

56. The router according to claim 42, further comprising:

means for combining at least two input uplink DCH traffic flows into one single output uplink DCH traffic flow,

wherein each input uplink DCH flow carries user data from the same user equipment.

57. The router according to claim 56, wherein the means for combining further comprises:

means for building a new DCH frame from a received set of DCH frames in the at least two input uplink DCH traffic flows to be combined;

means for encapsulating the new DCH frame in a UDP packet; and

means for sending the UDP packet in an uplink direction.

58. The router according to claim 57, wherein the means for building the new DCH frame from the received set of DCH frames to be combined further comprises:

means for including a selected set of Transport Blocks (TBs) in a payload of the new DCH frame;

means for copying a header of the received set of DCH frames to the new DCH frame; and

means for selecting a Quality Estimate (QE) value for the new DCH frame and, if a payload CRC is used, calculating a payload CRC for the new DCH frame.

59. The router according to claim 42, further comprising:

means for estimating a Latest Accepted Time of Arrival (LAToA) for a next set of DCH frames to be combined having a Connection Frame Number n (CFN n) based on times of arrival of previous set of frames having a CFN n-1; and

means for adjusting the estimates of the LAToA for each new frame adapted to a maximum transport delay that a frame can experience under normal circumstances on its path from the at least one Node B to the router.

60. A method in an Internet Protocol, IP, based UMTS Terrestrial Radio Access Network (UTRAN) Transport Network within a Universal Mobile Telecommunication System, the UTRAN transport network carrying Dedicated Channel (DCH) frames on DCHs between a RNC and at least one Node B, the method comprising:

splitting, within a router, one input downlink DCH traffic flow originating from the RNC into at least two output downlink DCH traffic flows by using an IP multicast protocol,

wherein each output downlink DCH flow carries user data destined to a same end user equipment,

wherein the router is separate from both the RNC and the Node Bs, and

wherein the router is in a communication traffic path between the RNC and the at least one Node B.

61. The method according to claim 60, further comprising:

replicating each DCH frame of the input downlink DCH traffic flow into a corresponding DCH frame of each output downlink DCH traffic flow; and

transmitting the replicated DCH frames of all output downlink DCH traffic flows according to the IP multicast protocol.

62. The method according to claim 60, wherein the IP multicast protocol is a Core Based Trees Multicast Routing version 2 (CBTv2) protocol.

63. The method according to claim 60, wherein the IP multicast protocol is a Protocol Independent Multicast-Sparse Mode (PIM-SM) protocol.

64. The method according to claim 60, wherein each output downlink DCH traffic flow is assigned a dedicated multicast destination address in the at least one Node B.

65. The method according to claim 60, further comprising:

identifying a mapping between the RNC and a multicast destination address by using a CBTv2 or PIM-SM bootstrap mechanism.

66. The method according to claim 60, further comprising:

determining whether the router is a splitting and/or combination router by using protocol(s) CBTv2 and/or MLD,

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

67. The method according to claim 60, further comprising:

determining whether the router is a splitting and/or combination router by using the protocol(s) PIM-SM and/or MLD,

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

68. The method according to claim 60, further comprising:

determining whether the router is a splitting and/or combination router by using the protocol(s) PIM-SM and/or Internet Group Management Protocol (IGMP),

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

69. The method according to claim 60, further comprising:

determining whether the router is a splitting and/or combination router by using the protocol(s) CBTv2 and/or Internet Group Management Protocol (IGMP),

wherein the protocol(s) are/is arranged to determine a number of listeners for a specific multicast destination address.

70. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by means of a utilization of a multicast address, assigned as a downlink destination address, as a source address of the DCH frames sent in the uplink DCH traffic flows from all participating Node Bs.

71. The method according to claim 70, further comprising:

identifying an originating Node B of an uplink DCH frame, based on a destination IP address and a destination UDP port assigned by the RNC to the Node B for the uplink of the DCH.

72. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by retrieving the destination address and the destination port(s) of the uplink DCH traffic flows from the RNC.

73. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by using an uplink flow identity implicit in the downlink flow.

74. The method according to claim 60, further comprising:

identifying DCH frames belonging to different uplink DCH traffic flows by modifying MLD or IGMP protocol and a multicast routing protocol such that

the destination port of the uplink is included in messages that are used to build a multicast tree.

75. The method according to claim 70, further comprising:

identifying an originating Node B of an uplink DCH frame, based on a source UDP port assigned by the RNC to the Node B for the uplink of the DCH.

76. The method according to claim 72, further comprising:

identifying an originating Node B of an uplink DCH frame, based on a source IF address.

77. The method according to claim 60, further comprising:

combining at least two input uplink DCH traffic flows into one output uplink DCH traffic flow,

wherein each input uplink DCH flow carries user data from the same user equipment.

78. The method according to claim 77, further comprising:

building a new DCH frame from a received set of DCH frames in the at least two input uplink DCH traffic flows to be combined;

encapsulating the new DCH frame in a UDP packet; and

sending the UDP packet in an uplink direction.

79. The method according to claim 78, wherein the building step further comprises:

including a selected set of Transport Blocks, TBs, in the payload of the new DCH frame;

copying the header of the received set of DCH frames to the new DCH frame; and

selecting a Quality Estimate, QE, value for the new DCH frame and, if a payload CRC is used, calculating a payload CRC for the new DCH frame.

80. The method according to claim 60, further comprising:

estimating a Latest Accepted Time of Arrival (LAToA) for a next set of DCH frames to be combined having a Connection Frame Number n (CFN n) based on the times of arrival of the previous set of frames having a CFNn-1, and

adjusting the estimates of the LAToA for each new frame adapted to the maximum transport delay that a frame can experience under normal circumstances on its path from the Node B to the combining router.

Claim 81 (Canceled)

82. A usable medium storing therein a program readable by a computer within a node in a Universal Mobile Telecommunication System, the

program including executable instructions to cause the computer to execute the method of claim 60.

Claims 83-84 (Canceled)

## IX. EVIDENCE APPENDIX

None.

## X. RELATED PROCEEDINGS APPENDIX

None.